

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/051437

International filing date (day/month/year)
09.07.2004

Priority date (day/month/year)
09.07.2003

International Patent Classification (IPC) or both national classification and IPC
F27D3/18, F27B3/22, C21C5/52

Applicant
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1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/EP2004/051437

IAP20 Rec'd PCT/PTO 05 JAN 2006

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/051437

Box No. II Priority

1. ☐ The following document has not been furnished:
- ☐ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
 - ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).
- Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. ☒ It has not been possible to consider the validity of the priority claim because a copy of the priority document was not available to the ISA at the time that the search was conducted (Rule 17.1). This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
4. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-15
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

PCT/EP2004/051437

Re Item V.

1 The following documents are referred to in this communication:

D1 : US 2003/000338 A1 (V.G SHVER) 2 January 2003 (2003-01-02)

D2 : DE 41 23 391 A1 (Elti S.r.l., Sovere, IT) 23 January 1992 (1992-01-23)

2 Novelty (Article 33(1)(2) PCT)

The present application meets the criteria of Article 33(1) PCT, because the subject-matter of independent claims 1 and 12 is new in the sense of Article 33(2) PCT.

Document D1 does not disclose a nozzle having an outlet cross section of a substantially oblong shape. Thus independent claims 1 and 12 are new with respect to document D1. Document D2 does not disclose a carbon particle injection device set underneath the burner nozzle. Thus independent claims 1 and 12 are new with respect to document D2.

Thus neither document D1 nor document D2 disclose all technical features of the independent claims 1 and 12.

3 Inventive step (Article 33(1)(3) PCT)

3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of independent claims 1 and 12 do not involve an inventive step in the sense of Article 33(3) PCT.

Document D1, which is considered to be the closest prior art, discloses a burner/lance as gas injecting device. From the figures, with reference to the description, it is clear that the burner/lance has a hollow body, an internal tube or pipe for injecting oxygen with a flame shroud from its burner portion and a head with at least one nozzle.

Further document D1 discloses a particulate injector for injecting particulate carbon which is set underneath the burner nozzle (Figure 10, ref. signs 9, 10, 13; § [0066]).

The subject-matter of claim 1 and 12 differs from document D1 in that the nozzle is of

substantial oblong shape whereas according to document D1 it is round.

The problem to be solved by the present invention may therefore be regarded as how to increase the surface area for the reaction/heating between charge and burner flame or injected reaction gas. However, this feature has already been employed for the same purpose in a similar process. Document D2 discloses a burner nozzles (column 3, line 8-55; column 4, line 54-61, figures 1, 4, 6, and 8) with an oblong outlet cross section. It would be obvious to the person skilled in the art, namely when the same result is to be achieved, to apply this feature with corresponding effect according to document D1. Thus independent claims 1 and 12 do not involve an inventive step (Article 33(3) PCT) regarding the combination of documents D1 and D2.

3.2 In dependent claims 2-11 and 13-15 slight constructional changes are defined, which are merely one or more of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed. Consequently, the subject-matter of independent claims 2-11 and 13-15 also lacks an inventive step.